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SECTION 00800 - SPECIAL CLAUSES

1. REFERENCE DRAWINGS.

a. One set of the reference drawings listed on Drawing No. M-BAT-2/G-1 which cover details of the existing structure, will be included in each set of the contract drawings furnished the Contractor without charge, in accordance with Contract Clause DFARS 252.236-7001. Drawings showing additional details are available for examination at the Dept. of the Army, St. Louis District, Corps of Engineers, St. Louis, Missouri. Additional prints of reference drawings will be furnished the Contractor on request at the cost of reproduction.

b. The stationing and dimensions shown on the contract and reference drawings for the existing structure have been taken from the original contract drawings and the shop drawings for the original construction. The Contractor shall verify all the above stationing and dimensions and shall be responsible for making the new material and work fit the existing conditions.

2. PAY REQUESTS. Pay requests authorized in the Contract Clause entitled "Payments Under Fixed-Price Construction Contracts", will be paid pursuant to the clause entitled "Prompt Payment for Construction Contracts". Pay requests shall be submitted on ENG Form 93 and 93a, "Payment Estimate-Contract Performance" and "Continuation", respectively. All information and substantiation required by the identified contract clauses shall be submitted with the ENG Form 93, and the required certification shall be included on the last page of the ENG Form 93a, signed by an authorized official of the Contractor and dated when signed. The designated billing office is the Office of the Area Engineer.

3. PHYSICAL DATA (APR 1984). FAR 52.236-4. Data and information furnished or referred to below is furnished for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

a. Physical Conditions. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys and borings. Information regarding these borings can be found in Section 02201 of these specifications. Additional information is available for inspection upon 48 hours notice at the Dept. of the Army, St. Louis District, Corps of Engineers, 1222 Spruce Street, St. Louis, Missouri. The Government has acquired permits pertaining specifically to this contract. After award a copy of each permit will be provided to the Contractor. A listing of permits acquired by the Government is as follows:

(1) National Pollution Discharge Elimination System (NPDES)

(2) Section 404 of the Clean Water Act

(3) Section 401 Water Quality Certification

(4) Section 10 of the Rivers and Harbors Act of 1899

b. Weather Conditions. Information with respect to temperatures and precipitation may be obtained from the National Weather Service.

c. Transportation Facilities. Railroads and highways serve the general area of the work. Water transportation is available to the site of the work and to the sheet pile storage area located on Ellis Island.

d. Delivery of Government-Furnished Property. The Government-furnished property specified in Clause 00800-33 will be made available to the Contractor upon request at the Ellis Island Storage Area. The Contractor shall give the Contracting Officer 5 days notice prior to taking delivery of the Government-furnished property.

e. Condition of River Channel. Data relating to river stages, soundings, and flow may be examined at the office of the Dept. of the Army, St. Louis District, Corps of Engineers St. Louis, Missouri.

f. Channel Traffic. There is moderate commercial and pleasure traffic operating in the Mississippi River adjacent to the site. The passage of large craft may delay operations in the channel.

g. Obstruction of Channel. The Government will not undertake to keep the channel free from vessels or other obstructions, except to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army, in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor will be required to conduct the work in such manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Upon completion of the work under this contract, all plant, including ranges, buoys, piles, and other marks placed in navigable waters or on shore by the Contractor shall be promptly removed.

4. RIGHT-OF-WAY.

a. Right-of-way for construction purposes will be furnished by the Government without cost to the Contractor. Where right-of-way for access to a work site is not available over existing public roads, access through private lands as shown on the contract drawings will be furnished by the Government without cost to the Contractor. If the right-of-way furnished for access is used, the Contractor will be required at its own expense, to do all work necessary to make such right-of-way suitable for traveling to and from the work site without interrupting the existing drainage. Upon completion of the contract work, any such access roadway and right-of-way furnished by the Government shall be left in a condition satisfactory to the Contracting Officer.

b. The Contractor shall procure without expense to the Government all additional lands, access roads, or right-of-way necessary for its use in the performance of the work. Any agreements or permits with levee boards, counties, or political subdivisions for moving material and equipment will also be the responsibility of the Contractor. Any delays to the Contractor resulting from delays in procuring such additional lands, access roads, right-of-way, or permits for moving material and equipment for its own use will not be made a basis of any claim for increases in the cost of performance of the work. The Contractor shall make its own investigations to determine the

conditions, restrictions, and difficulties which may be encountered in the transportation of material and equipment to the work sites shown on the drawings.

5. PUBLIC UTILITIES AND PRIVATE IMPROVEMENTS.

a. Unless otherwise specified, shown on the drawings, or stated in writing by the Contracting Officer, the Contractor shall not move or disturb any public utilities or private improvements. Such removals, alterations, and/or relocations, where necessary, will be made by others. The locations shown on the drawings for underground utilities are approximate only. The exact locations of such utilities shall be determined by the Contractor in the field prior to commencing construction operations in their vicinity.

b. The attention of the Contractor is directed to the possibility that public utilities or private improvements may be encountered within the construction limits, some of which may be buried, and the existence of which is presently not known. Should any such utilities or improvements be encountered, the Contractor shall immediately notify the Contracting Officer so that a determination may be made as to whether they shall be removed, relocated, or altered. After such determination is made, the Contractor shall, if so directed by the Contracting Officer, remove, relocate, or alter them as required and an equitable adjustment will be made. In the event the Contracting Officer arranges for such removals, alterations, or relocations to be performed by others, the Contractor shall cooperate with such others during the latters' removal, alteration, or relocation operations.

6. DAMAGE TO WORK.

a. The responsibility for damage to any part of the work to be performed under this contract shall be as set forth in the clause of the contract entitled "Permits and Responsibilities". However, if the cofferdam(s) is constructed in accordance with plans and progress schedules approved by the Contracting Officer, but is overtopped by flood and such flood causes damage to the cofferdam or if any part of the permanent work is damaged by flood or earthquake, which damage is not due to the failure of the Contractor to take reasonable precaution or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such damaged work, an equitable adjustment pursuant to the Contract Clause entitled, "Changes", will be made as full compensation therefor.

b. The Contractor may, subject to approval of the Contracting Officer, or the Contracting Officer may order the Contractor to, flood or breach the cofferdam during a rise prior to, and in anticipation of, natural flooding due to overtopping. Such flooding or breach will be considered the same as though the cofferdam, if constructed in accordance with plans and progress schedules approved by the Contracting Officer, had been overtopped, in which event an equitable adjustment will be made for damages to the cofferdam and/or any part of the permanent work, as provided in (a) above.

7. LAYOUT OF WORK.

a. The Government will establish the following base lines and bench marks at the site of the work:

(1) One bench mark (vertical control) will be provided at each gravity structure (M-3, R-3, Q-2, O-6.1, O-6.2 and O-6.3) location.

(2) Two horizontal control points (with coordinate values) at each gravity structure (M-3, R-3, Q-2, O-6.1, O-6.2 and O-6.3) location.

(3) Construction limits for the borrow areas.

b. From the base lines and bench marks established by the Government, the Contractor shall complete the layout of the work and shall be responsible for all measurements that may be required for the execution of the work to the location and limit marks prescribed in the specifications or on the contract drawings, subject to such modifications as the Contracting Officer may require to meet changed conditions or as a result of necessary modifications to the contract work.

c. The Contractor shall furnish at its own expense such stakes, templates, platforms, equipment, tools and material, and all labor as may be required in laying out any part of the work from the base lines and bench marks established by the Government. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Contracting Officer until authorized to remove them, and if such marks are destroyed by the Contractor or through its negligence prior to their authorized removal, they may be replaced by and at the discretion of, the Contracting Officer, and the expense of replacement will be deducted from any amounts due or to become due the Contractor. The Contracting Officer may require that work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking of the work.

8. QUANTITY SURVEYS (APR 1984). FAR 52.236-16

a. Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

b. The Government shall conduct the original and final surveys and make the computations based on them. The Contractor shall conduct the surveys for any periods for which progress payments are requested and shall make the computations based on these surveys. All surveys conducted by the Contractor shall be conducted under the direction of a representative of the Contracting Officer, unless the Contracting Officer waives this requirement in a specific instance.

c. Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer.

9. PARTIAL PAYMENT. At the discretion of the Contracting Officer, partial payment will be made for equipment delivered and stored on site or off site providing such storage is in accordance with the provisions of these

specifications and the Contractor furnishes satisfactory evidence that title to such equipment has been acquired and that it will be utilized on the work covered by these specifications. Partial payment is defined as the invoice amount plus shipping costs. If the equipment is stored off site, the Government shall have the right to inspect the equipment.

10. CERTIFICATES OF COMPLIANCE. Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in 3 copies. Each certificate shall include the signature and title of an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from responsibility for furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

11. PURCHASE ORDERS. Two copies of all purchase orders for other than stock materials showing the firm names and addresses and list of material shall be furnished to the Contracting Officer or an authorized representative as soon as issued.

12. SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. Safety and Health Requirements Manual EM 385-1-1, dated September 3, 1996, forms a part of these specifications.

13. ACCIDENT INVESTIGATIONS AND REPORTING. Refer to EM 385-1-1, Paragraph 01.D. Accidents shall be investigated and reports completed by the immediate supervisor of the employee(s) involved and reported to the Contracting Officer or an authorized representative within one working day after the accident occurs. The accident Investigation report shall be made on ENG Form 3394.

14. ACCIDENT PREVENTION PROGRAM. Refer to Contract Clause FAR 52.236-13 entitled, "Accident Prevention". Within 15 days after receipt of Notice of Award of the contract, and at least 7 days prior to the prework conference, the original and one copy of the Accident Prevention Program shall be submitted to the Contracting Officer for review. The program shall be prepared in the following format:

a. An executed LMV Form 358R, Administrative Plan.

b. An executed LMV Form 359R, Activity Hazard Analysis.

c. A copy of company policy statement of accident prevention and any other guidance statements normally provided new employees. Each company employee shall be required to sign the company policy statement of accident prevention to verify that all employees have been informed of the safety program, and such signed statements shall be maintained at the project site.

d. When marine plant and equipment are in use under a contract, the method of fuel oil transfer shall be included on LMV Form 414R, Fuel Oil Transfer (refer to 33 CFR 156).

The Contractor shall not commence physical work at the site until the program

has been reviewed and found acceptable by the Contracting Officer, or an authorized representative. At the Contracting Officer's discretion, the Contractor may submit its Activity Hazard Analysis only for the first phase of construction provided that it is accompanied by an outline of the remaining phases of construction. All remaining phases shall be submitted and accepted prior to the beginning of work in each phase. Also refer to Section 1 of EM 385-1-1.

15. DAILY INSPECTIONS. The Contractor shall perform daily safety inspections and record them on the forms approved by the Contracting Officer. Reports of daily inspections shall be maintained at the job site. The reports shall be records of the daily inspections and resulting actions. Each report shall include, as a minimum, the following:

a. Phase(s) of construction underway during the inspection.

b. Locations of areas inspections were made.

c. Results of inspection, including nature of deficiencies observed and corrective actions taken, or to be taken, date, and signature of the person responsible for its contents.

16. ENVIRONMENTAL LITIGATION.

(a) If the performance of all or any part of the work is ordered by a court of competent jurisdiction to be suspended, delayed, or interrupted as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the Contract Clause entitled "Suspension of Work".

(b) The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

17. TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER.

a. This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the Contract Clause entitled, "Default (Fixed-Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control

and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(6)	(6)	(10)	(10)	(11)	(6)	(5)	(6)	(4)	(6)	(9)	(7)

c. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the Contract Clause entitled "Default (Fixed Price Construction)".

18. SUBCONTRACTS. In accordance with the Contract Clause entitled "Subcontracts", the Contractor shall, within seven days after the award of any subcontract by the Contractor or a Subcontractor, deliver to the Contracting Officer two copies of a completed Standard Form 1413. Both copies must contain the original signatures of both parties.

19. REQUIRED INSURANCE - WORK ON A NON-GOVERNMENT INSTALLATION.

a. The Contractor shall, at its own expense, provide and maintain during the entire performance period of this contact at least the kinds and minimum amounts of insurance required in the following schedule:

(1) Workmen's Compensation. Amounts required by applicable jurisdictional statutes.

(2) Employer's Liability Insurance. $100,000

(3) Comprehensive General Liability Insurance.

Bodily Injury - $500,000 per occurrence

(4) Comprehensive Automobile Insurance.

Bodily Injury	-	$200,000 each person
		$500,000 each accident
Property Damage	-	$ 20,000 each accident

b. Within 15 days after receipt of Notice of Award and before commencing work under this contract, the Contractor shall notify the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective (1) for such period as the laws of the State in which this contract is to be performed prescribe, or (2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

c. The Contractor shall insert the substance of this clause, including this paragraph c, in subcontracts under this contract and shall require subcontractors to provide and maintain the insurance required in paragraph a above. The Contractor shall maintain a copy of all subcontractor's proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

d. Statements of insurance should be submitted to the following address:

Department of the Army
St. Louis District, Corps of Engineers
Northern Area Office, CEMVS-CO-CN
P.O. Box 78
Elsberry, Missouri 63343

20. PROTECTION OF MATERIAL AND WORK. The Contractor shall at all times protect and preserve all materials, supplies, and equipment of every description (including property which may be Government-furnished or owned) and all work performed. All reasonable requests of the Contracting Officer to enclose or specially protect such property shall be complied with. If, as determined by the Contracting Officer, material, equipment, supplies, and work performed are not adequately protected by the Contractor, such property may be protected by the Government and the cost thereof may be charged to the Contractor or deducted from any payments due to the Contractor.

21. CONTAMINATION OF WATER. In addition to the requirements set forth in 01130-3.3, Protection of Water Resources, the Contractor shall take positive protective measures to prevent spillage of potential pollutant materials such as fuel, emulsion materials, chemicals etc., from storage containers or equipment, into lakes or tributary waters. Such positive protective measures may include, but not limited to, the following:

(1) A berm enclosure of sufficient capacity to contain such materials.

(2) Security measures to prevent acts of vandalism which could result in spillage of such materials (fences, guards, etc.).

(3) Storage of such materials in an area where the terrain would preclude leakage into lake or tributary waters.

(4) Utilization of secure Government storage areas if the Contracting Officer indicates such space is available. No storage past immediate needs (2 days) without the consent of the Contracting Officer.

The Contractor shall submit its proposals for implementing the above provisions in accordance with 01130-1.5, Environmental Protection Plan.

22. COMMERCIAL WARRANTY. The Contractor agrees that the standard commercial equipment furnished under this contract shall be covered by the most favorable commercial warranties the manufacturer gives to any customer for such equipment, and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract. The Contractor shall furnish two copies of the warranties to the Contracting Officer.

23. ORDER AND COORDINATION OF WORK. The Contractor may start and complete the work in such order and sequence as desired subject to compliance with the following paragraphs:

a. Contractor Access.

(1) Pump Stations/Gravity Structures. Access to pump stations and gravity structures may be available by using the top of the existing levee, constructing haul roads at the toe of the levee, or by river access. The Contractor will be responsible for restoring levees and areas disturbed by access to pre-existing conditions. Existing top of levee is covered with approximately 6-inch crushed stone surfacing, and any damage to this surface will require reconstruction as directed by the Contracting Officer. Refer to paragraph 00800-23.d., for the U.S. Fish and Wildlife Service point-of-contact.

(2) Ellis Island Storage Area. Ellis Island storage area construction limits are located at MRM 202.2 near the Clark Bridge in West Alton, MO. Construction activities at the Ellis Island storage area shall be coordinated through:

Mr. Stan Ebersohl, Area Manager
Rivers Project Office, CEMVS-CO-N
301 Riverlands Way
West Alton, Missouri 83386
Telephone: 314/899-2600

b. Environmental Limitations.

(1) Archaeological Monitoring. See SECTION 01130, Paragraph 3.2 for archaeological monitoring requirements.

(2) Indiana Bat Habitat. Clearing of trees greater than 9 inch diameter at breast height shall not be performed during the period between 1 April and 30 September unless otherwise approved by the Contracting Officer. Approval by the Contracting Officer may be granted after the completion of an Indiana Bat habitat survey is performed by a multi-agency environmental team and no bats or habitat are discovered. In the event bats or habitat are discovered, an equitable adjustment in performance time will be made for any increase in the time required for performance of any part of the work arising from Government mitigation of the presence of bats or habitat.

(3) Bald Eagle Roosts. Should any bald eagle night roost activity be noted in the Batchtown Project Area, the Corps of Engineers, Planning Division shall be immediately contacted to determine if any buffer zone restrictions will be required for construction operations. An equitable adjustment in performance time will be made for any increase in the time required for performance of any part of the work impacted by any restrictions.

(4) Duck Hunting. In order to accommodate duck hunting in the area, no work shall be performed between 15 October and 15 December. The double road gate to be installed as shown on M-BAT-2/G-3.1 shall be completed prior to duck hunting season work stoppages.

c. Flood Protection. The pump station and gravity structure project locations are situated in a relatively low elevation flood plain and the potential exists for frequent flood events. The Contractor shall protect the construction area at each gravity structure site from flooding once construction has commenced by constructing cofferdams as shown on the drawings and in accordance with SECTION 02140 – DEWATERING AND SURFACE WATER CONTROL. The Contractor also shall develop and provide a system for unwatered access to the items at the pump station and outlet structure to be replaced or altered. For additional information the Contractor should refer to the land elevations and hydrographs shown on the drawings. The hydrographs are from the Pool and Tailwater gages, at Lock and Dam No. 25, Winfield, Missouri. The project area is at Mississippi River mile locations shown on the drawings.

d. Batchtown is connected to the Mississippi River, which is influenced by pool conditions at Lock and Dam No. 25. Batchtown and the surrounding lands are managed by the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service, point-of-contact is the Refuge Manager (618) 883-2524.

e. Coordination With Other Contracts. The Contractor is advised that other contracts may be ongoing at the Batchtown and Ellis Island sites during the life of this contract, and the Contractor shall coordinate its work so as not to interfere with other construction activities. The portions of the work identified in this contract as "work by others" may not necessarily be performed concurrently with this work.

f. The Contractor shall coordinate all work that may inhibit the public’s use of the existing gravel road and boat ramps with the Illinois Department of Natural Resources (IDNR), Neil Booth (618) 376-3303 and the U.S. Fish and Wildlife Service Refuge Manager (618)883-2524. The Contractor shall make every effort to allow the public access to these facilities without compromising work site safety, security, or construction quality.

g. Construction Sequence for Cellular Structures. The Contractor shall construct the sheet pile cellular structures according to the following procedures:

GRAVITY STRUCTURES R-3, Q-2, O-6.2, O-6.3

(1) Prior to cell construction, pre-excavate the site to the sill elevation (EL. 429.5 at EL. R-3, EL. 429.0 at Q-2, O-6.2, O-6.3) over the footprint of the structure, to the lines shown on the drawings.

(2) FIRST CELL CONSTRUCTION

(a) Set the template and place and drive the sheet piling for the first cell according to the contract drawings and specifications. The cell piling will include three fabricated connection piles. One connection pile provides an interface with the reaction wall beneath the sill beam and shall be fabricated as shown on the contract drawings. The other two connection piles provide an interface with the cofferdam walls between the cells and are Contractor-designed. Drive the PZ22 reaction wall sheet pile connecting to the cell as part of the first cell construction.

(b) Using a clamshell, fill the cell interior with sand, placed through water, to an elevation one foot higher than the water surface in the channel, in accordance with SECTION 02213 – PERVIOUS MATERIAL. Continue to fill the cell above this elevation with densified sand placed in eight-inch-thick lifts. The densified sand shall be placed to an average relative density of 85 percent, with no test less than 80 percent. Complete the Quality Control tests in accordance with SECTION 02213. When the sand reaches the top of the cell sheet piling, continue loading sand on the top of the cell, heaping this material to the greatest height that may be sustained without sloughing and within one foot of the perimeter of the cell. Inspect the piling interlocks to insure all are tight.

(c) Measure the completed cell diameter in both principal directions (parallel and perpendicular to the levee centerline) at the sill elevation, the top of the cell, and halfway between these elevations. Determine the amount of cell expansion beyond the specified cell diameter of 47.75 feet. At the tangent to the channel, determine the relative horizontal movement between the top of the cell and the sill elevation (the bottom of the pre-excavation).

(3) SECOND CELL CONSTRUCTION

(a) Assuming the amount of expansion and relative movement measured in the first cell will also occur in the second cell, locate the center of the second cell such that the distance between the two cells, as measured at the sill elevation, will be 11 feet (for R-3 and Q-2) or 22 feet (for O-6.2 and O-6.3) when the second cell is complete.

(b) Set the template and place and drive the piling for the second cell, including the PS32 sheet piling, the three fabricated connection piles, and the reaction wall PZ22 reaction wall pile connecting to the cell, according to the contract drawings and specifications.

(c) Backfill the interior of the second cell with sand, in accordance with SECTION 02213 and using the same procedure as the first cell. Complete Quality Control tests in accordance with SECTION 02213. When the sand reaches the top of the cell sheet piling, continue loading sand on the top of the cell, heaping this material to the greatest height that may be sustained without sloughing and within one foot of the perimeter of the cell. Inspect the piling interlocks to insure all are tight.

(d) Measure the completed cell diameter in both principal directions (parallel and perpendicular to the levee centerline) at the sill elevation and at the top of the cell. Determine the amount of cell expansion beyond the specified diameter of 47.75 feet. At the tangent to the channel, determine the relative horizontal movement between the top of the cell and the bottom of the cofferdam excavation.

(4) COMPLETION OF GRAVITY STRUCTURE CONSTRUCTION

(a) On each side of the gravity structure, place and drive a line of PZ22 sheet piles between the remaining fabricated connection piles in the cells to form a cofferdam. The top of the piles shall be at or above EL. 438.0, to provide freeboard against wave action. If needed, place clay fill against the exterior of the PZ22 piles to seal the sides of the cofferdam, consistent with the Contractor's plan for dewatering.

(b) Install the dewatering system in accordance with the specifications and contract drawings. Dewater the area within the cofferdam in accordance with SECTION 02140 – DEWATERING AND SURFACE WATER CONTROL.

(c) Perform localized excavation within the cofferdam as required for installation of the sill beam.

(d) Measure the distance between the cells at the location of the centerline of the PZ22 reaction wall sheet piles. Take these measurements at the top of the cells and at the completed channel elevation.

(e) Set the templates and place and drive the remaining PZ22 reaction wall piles per the specifications, to the lines and elevations shown on the drawings. Set and drive the piles a pair at a time, adjusting the setting width of each pair to accommodate the distance between the PZ22 piles driven with the cells.

(f) Install the sill beam with its embedded metals on top of the reaction wall piles as shown on the drawings. Allow time for adequate strength to develop in the sill beam prior to installation of the stoplog slot assemblies if the sill beam is cast in place. Fabricate the cell side closure plates based on the distances between cells measured in step (4)(d) above. Install the vertical stoplog slot assemblies and cell side closure plates. At O-6.2 and O-6.3, install temporary supports between the cells and across the channel opening as required to hold the center stoplog slot assembly in the vertical position until the bridge abutments are constructed and the horizontal stoplog support beams are installed.

(g) Excavate inside the cofferdam for placement of the stone protection on both sides of the sill beam.

(h) Place stone protection within the cofferdam to the lines and elevations shown on the drawings.

(i) Rewater the cofferdam. At O-6.2 and O-6.3, take care not to damage or displace the supported center vertical stoplog slot assembly during the rewatering process. If fill material has been placed against the cofferdam walls for sealing, remove it as part of the rewatering process. Cut off the cofferdam walls between the cells, at an elevation six inches below the top of the stone protection.

(j) At each end of the structure, install impervious fill between the outer surfaces of the cell and the excavation side slope, up to EL. 435.0 Place semicompacted fill above this elevation, up to the construction grade of the levee.

(k) Excavate the heaped material from the tops of the cells. Finish the top of the sand fill in each cell to the elevation and

slope required for construction of the concrete cell cap. The Contractor may elect to complete placement of the embankment at this time.

(l) Excavate the cell fill for construction of the bridge abutments. Perform two in-place density tests in each cell at the bearing elevation, within the footprint of each footing, to assure that a relative density of at least 80% has been achieved.

(m) Construct the bridge abutments.

(n) Backfill around the bridge abutments to the grade indicated on the contract drawings with compacted sand in accordance with SECTION 02213.

(o) Complete remaining work at the gravity structure. Perform trial installation of the stoplogs in each stoplog bay of each structure to the full height of protection in the bay.

(5) Unless otherwise specified, the above-described work shall be performed in accordance with the specifications and contract drawings.

GRAVITY STRUCTURE O-6.1

(1) Prior to cell construction, pre-excavate the site to the sill elevation (EL. 425.0) over the footprint of the structure, to the lines shown on the drawings.

(2) FIRST CELL CONSTRUCTION

(a) Set the template and place and drive the sheet piling for the first cell according to the contract drawings and specifications. The cell piling will include five fabricated connection piles. One connection pile provides an interface with the reaction wall beneath the sill beam and shall be fabricated as shown on the contract drawings. The two outermost connection piles interface with the sheet pile wing walls tying the cell into the levee and shall be fabricated as shown on the contract drawings. The two remaining connection piles provide an interface with the cofferdam walls between the cells and are Contractor-designed. Drive the PZ22 reaction wall and wing wall sheet piles connecting to the cell as part of the first cell construction.

(b) Using a clamshell, fill the cell interior with sand, placed through water, to an elevation one foot higher than the water surface in the channel, in accordance with SECTION 02213 – PERVIOUS MATERIAL. Continue to fill the cell above this elevation with densified sand placed in eight-inch-thick lifts. The densified sand shall be placed to an average relative density of 85 percent, with no test less than 80 percent. Complete the Quality Control tests in accordance with SECTION 02213. When the sand reaches the top of the cell sheet piling, continue loading sand on the top of the cell, heaping this material to the greatest height that may be sustained without sloughing and within one foot of the perimeter of the cell. Inspect the piling interlocks to insure all are tight.

(c) Measure the completed cell diameter in both principal directions (parallel and perpendicular to the levee centerline) at the sill elevation, the top of the cell, and halfway between these elevations. Determine the amount of cell expansion beyond the specified cell diameter of

47.75 feet. At the tangent to the channel, determine the relative horizontal movement between the top of the cell and the sill elevation (the bottom of the pre-excavation).

(3) SECOND CELL CONSTRUCTION

(a) Assuming the amount of expansion and relative movement measured in the first cell will also occur in the second cell, locate the center of the second cell such that the distance between the two cells, as measured at the sill elevation, will be 22 feet when the second cell is complete.

(b) Set the template and place and drive the piling for the second cell, including the PS32 sheet piling, the five fabricated connection piles, the PZ22 reaction wall and wing wall sheet piles connecting to the cell, according to the contract drawings and specifications.

(c) Backfill the interior of the second cell with sand, in accordance with SECTION 02213 and using the same procedure as the first cell. Complete Quality Control tests in accordance with SECTION 02213. When the sand reaches the top of the cell sheet piling, continue loading sand on the top of the cell, heaping this material to the greatest height that may be sustained without sloughing and within one foot of the perimeter of the cell. Inspect the piling interlocks to insure all are tight.

(d) Measure the completed cell diameter in both principal directions (parallel and perpendicular to the levee centerline) at the sill elevation and at the top of the cell. Determine the amount of cell expansion beyond the specified diameter of 47.75 feet. At the tangent to the channel, determine the relative horizontal movement between the top of the cell and the bottom of the cofferdam excavation.

(4) COMPLETION OF GRAVITY STRUCTURE CONSTRUCTION

(a) On each side of the gravity structure, place and drive a line of PZ22 sheet piles between the remaining fabricated connection piles in the cells to form a cofferdam. The top of the piles shall be at or above EL. 438.0, to provide freeboard against wave action. If needed, place clay fill against the exterior of the PZ22 piles to seal the sides of the cofferdam, consistent with the Contractor’s plan for dewatering. Place and drive the remaining wing wall piles to the lines and elevations shown on the drawings.

(b) Install the dewatering system in accordance with the specifications and contract drawings. Dewater the area within the cofferdam in accordance with SECTION 02140 – DEWATERING AND SURFACE WATER CONTROL.

(c) Perform localized excavation within the cofferdam as required for installation of the sill beam.

(d) Measure the distance between the cells at the location of the centerline of the PZ22 reaction wall sheet piles. Take these measurements at the top of the cells and at the completed channel elevation.

(e) Set the templates and place and drive the remaining PZ22 reaction wall piles per the specifications, to the lines and elevations shown on the drawings. Set and drive the piles a pair at a time, adjusting

the setting width of each pair to accommodate the distance between the PZ22 piles driven with the cells.

(f) Install the sill beam with its embedded metals on top of the reaction wall piles as shown on the drawings. Allow time for adequate strength to develop in the sill beam prior to installation of the stoplog slot assemblies if the sill beam is cast in place. Fabricate the cell side closure plates based on the distances between cells measured in step (4)(d) above. Install the vertical stoplog slot assemblies and cell side closure plates. Install temporary supports between the cells and across the channel opening as required to hold the center stoplog slot assembly in the vertical position until the bridge abutments are constructed and the horizontal stoplog support beams are installed.

(g) Excavate inside the cofferdam for installation of the stone protection on both sides of the sill beam.

(h) Place stone protection within the cofferdam to the lines and elevations shown on the drawings.

(i) Rewater the cofferdam. Take care not to damage or displace the supported center vertical stoplog slot assembly during the rewatering process. If fill material has been placed against the cofferdam walls for sealing, remove it as part of the rewatering process. Cut off the cofferdam walls between the cells, at an elevation six inches below the top of the stone protection.

(j) At each end of the structure, place sand fill within the area delineated by the Z-pile wing walls, the face of the excavation and the cell up to EL. 435.0 Place this sand fill in the same manner as the sand fill was placed within the cells. Place semicompacted fill above this elevation to the construction grade of the levee.

(k) Excavate the heaped material from the tops of the cells. Finish the top of the sand fill in each cell to the elevation and slope required for construction of the concrete cell cap. The Contractor may elect to complete placement of the embankment at this time. Upon completion of the embankment, the top of the wing wall sheet piling shall be trimmed to follow the finished ground surface. Piling shall be cut off six inches below the top of any stone protection. Scrap material shall be disposed of off-site.

(l) Excavate the cell fill for construction of the bridge abutments. Perform two in-place density tests in each cell at the bearing elevation, within the footprint of each footing, to assure that a relative density of at least 80% has been achieved.

(m) Construct the bridge abutments.

(n) Backfill around the bridge abutments to the grade indicated on the contract drawings with pervious fill in accordance with SECTION 02213.

(o) Complete remaining work at the gravity structure. Perform trial installation of the stoplogs in both bays to the full height of protection in the bays.

(5) Unless otherwise specified, the above-described work shall be performed in accordance with the specifications and contract drawings.

h. Earthen Cofferdam. Structure M-3 is the only gravity drain structure that will require an earthen cofferdam. The construction sequence of the cellular structures will not require earthen cofferdams during construction.

i. Borrow Area No. 2. Borrow Area 2 is currently being used as a moist soil unit by the U.S. Fish and Wildlife Service. This borrow area will be required to be drained prior to borrowing material and the material dried. The Contractor shall re-establish the existing drainage patterns after all the needed borrow material has been removed from this area. The borrow area shall not consist of any trapped water, deep holes or mounds of material. The Contractor shall not leave this borrow area until the Contracting Officer has approved the condition in which the borrow area has been left.

j. Roadway B-2 Alignment. Near stationing 2+00 of Roadway B-2, several trees have been identified as potential environmental habitat areas. The Contracting Officer should be contacted to field locate the road alignment prior to work in this area to avoid the ring-painted trees.

24. AS-BUILT DRAWINGS.

a. "As-Built" Contract Drawings. The Contractor shall maintain a separate set of full-size contract drawings, marked up in red, to indicate as-built conditions. Each as-built contract drawing shall include the Contract Number (DACW43-XX-C-XXXX) associated with the contract. These drawings shall be maintained in a current condition at all times until completion of the work and shall be available for review by Government personnel at all times. All variations from the contract drawings, for whatever reason, including those occasioned by modifications, optional materials, and the required coordination between trades, shall be indicated. These variations shall be shown in the same general detail utilized in the contract drawings. Upon completion of the work, two (2) sets of the marked-up drawings shall be furnished to the Contracting Officer prior to acceptance of the work. The Government will withhold two percent of the total bid price of the items for which as-built contract drawings have not been submitted.

b. "As-Built" Shop Drawings. Upon completion of items of work, the Contractor shall revise the shop drawings to show "as-built" conditions. The notation "Revised to show 'as-built' conditions" shall be placed in red in the lower right corner of each drawing along with the initials of a responsible company representative. Each as-built shop drawing or catalog cut shall be identified by the Contract Number (DACW43-XX-C-XXXX) associated with the contract, and corresponding transmittal number from ENG Form 4025. "As-built" shop drawings of each Contractor-prepared construction drawing should be prepared as soon as possible after the construction detailed on a given drawing has been completed. After the "as-built" shop drawings have been prepared as described above and within 15 days after the contract completion date, the Contractor shall submit four (4) complete sets of as-built shop drawings, including catalog cuts, to the Contracting Officer. The Government will withhold two percent of the total bid price of the item for which as-built shop drawings have not been submitted.

25. NOT USED.

26. MEANS OF ESCAPE FOR PERSONNEL QUARTERED OR WORKING ON FLOATING

PLANT. Two means of escape shall be provided for assembly, sleeping, and messing areas on floating plants. For areas involving 10 or more persons, both means of egress shall be through standard size doors opening to different exit routes. Where 9 or fewer persons are involved, one of the means of escape may be a window (minimum dimensions 24-inch by 36-inch) which leads to a different exit route. Refer to Section 19 of EM 385-1-1.

27. EMERGENCY ALARMS AND SIGNALS.

a. Alarms. Emergency alarms shall be installed and maintained on all floating plant requiring a crew where it is possible for either a passenger or crewman to be out of sight or hearing from any other person. The alarm system shall be operated from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical-system failure. A sufficient number of signaling devices shall be placed on each deck so that the sound can be heard distinctly at any point above the usual background noise. All signaling devices shall be so interconnected that actuation can occur from at least one strategic point on each deck.

b. Signals.

(1) Fire Alarm Signals. The general fire alarm signal shall be in accordance with para 97.13-15b of the Coast Guard Rules and Regulations for Cargo and Miscellaneous Vessels, Subchapter I, 1 Sep 77 (CG 257).

(2) Abandon Ship Signals. The signal for abandon ship shall be in accordance with paragraph 97.13-15c of reference cited in (1) above.

(3) Man-Overboard Signal. Hail and pass the word to the bridge. All personnel and vessels capable of rendering assistance shall respond.

c. Mooring Lines. Eye loops on mooring lines will be equipped with beckets or handling ropes to protect the hands of deckhands.

28. USE OF MECHANIZED EQUIPMENT ON FLOATING PLANT. When mechanized equipment is operated on floating plant the Contractor shall provide positive and acceptable means of preventing this equipment from moving or falling into the water. The type of equipment addressed by this clause includes pile drivers, front-end loaders, bulldozers, trucks (both on- and off-road), backhoes, track hoes, and similar equipment. If the Contractor plans to use such equipment on floating plant, an Activity Hazard Analysis must be developed for this feature of work. The plan must include a detailed explanation of the type or types of physical barriers, curbs, structures, etc., which will be incorporated to protect the operator and prevent the equipment from entering the water. Nonstructural warning devices may be considered for situations where the use of structural barriers is determined to be impracticable. The Activity Hazard Analysis must thoroughly address the procedure and shall be submitted to the Contracting Officer for review and acceptance prior to start of this feature of work.

29. OBSTRUCTION OF NAVIGABLE WATERWAYS (DEC 1991). DFARS 252.236-7002.

(a) The Contractor shall--

(1) Promptly recover and remove any material, plant, machinery, or

appliance which the contractor loses, dumps, throws overboard, sinks, or misplaces, and which, in the opinion of the Contracting Officer, may be dangerous to or obstruct navigation;

(2) Give immediate notice, with description and locations of any such obstructions, to the Contracting Officer, and

(3) When required by the Contracting Officer, mark or buoy such obstructions until the same are removed.

(b) The Contracting Officer may--

(1) Remove the obstructions by contract or otherwise should the Contractor refuse, neglect, or delay compliance with paragraph (a) of this clause; and

(2) Deduct the cost of removal from any monies due or to become due to the Contractor, or

(3) Recover the cost of removal under the Contractor's bond.

(c) The Contractor's liability for the removal of a vessel wrecked or sunk without fault or negligence is limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et.seq.).

30. SIGNAL LIGHTS. The Contractor shall display signal lights and conduct its operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International-Inland (Comdtinst M16672.2) or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable.

31. INSPECTION FACILITIES.

a. In order to facilitate inspection, the Contractor will be required, without additional cost to the Government:

(1) To furnish, on the request of the Contracting Officer or any inspector, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the plant as may be reasonably necessary in inspecting the work.

(2) To furnish, on the request of the Contracting Officer or any inspector, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant.

b. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.

32. STONE SOURCES.

a. On the basis of information and data available to the Contracting Officer, stone meeting the quality requirements of these specifications has been produced from the sources listed at the end of these Special Clauses.

b. Stone may be furnished from any of the currently listed sources or, at the option of the Contractor, may be furnished from any other source designated by the Contractor and accepted by the Contracting Officer, subject to the conditions hereinafter stated.

c. It is the Contractor's responsibility to determine that the stone source or combination of sources selected are capable of supplying the quantities and gradation needed and at the rate needed to maintain the scheduled progress of the work.

d. After the award of the contract, the Contractor shall designate in writing only one source or one combination of sources from which stone will be furnished. If the Contractor proposes to furnish stone from a source not currently listed, only a single additional source for stone may be designated. Samples for acceptance testing shall be provided as required by SECTION-02270. If a source for stone so designated by the Contractor is not accepted for use by the Contracting Officer, the Contractor may not propose other sources but shall furnish the stone from a source listed at no additional cost to the Government.

e. Acceptance of a source of stone is not to be construed as acceptance of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels when such materials are unsuitable for stone as determined by the Contracting Officer. Materials produced from a listed or unlisted source shall meet all the requirements of SECTION 02270, of the Technical Provisions of these specifications.

33. IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY. FAR 52.245-3 (APR 1984)

a. The Government will furnish to the Contractor the property identified in the Schedule, to be incorporated or installed in the work or used in performing the contract. The listed property will be furnished at the place specified in Special Clause 00800-3, Paragraph d. The Contractor is required to accept delivery, pay any demurrage or detention charges, and unload and transport the property to the job site at its own expense. When the property is delivered, the Contractor shall verify its quantity and condition and acknowledge receipt in writing to the Contracting Officer. The Contractor shall also report in writing to the Contracting Officer within 24 hours of delivery any damage to or shortage of the property as received. All such property shall be installed or incorporated into the work at the expense of the Contractor, unless otherwise indicated in this contract.

b. The quantity of Government-furnished PS32 sheet piling available to be utilized in this contract is approximately 42,000 linear feet in lengths varying from 90 feet to 100 feet. The details of the sheet pile work to be performed in this contract are specified in SECTION 02411 and are shown on the drawings. The value of the aforesaid property is estimated to be approximately $84,000.

34. YEAR 2000 COMPLIANCE (Y2K). In accordance with FAR 39.106, the Contractor shall ensure that with respect to any design, construction, goods or services under this contract as well as any subsequent task/delivery orders issued under this contract (if applicable), all information technology contained therein shall be Year 2000 compliant. The Contractor shall:

(a) Perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishings under this contract and each task/delivery order that may be affected by the Y2K compliance requirement;

(b) Indicate whether each component is currently Year 2000 compliant or requires an upgrade for compliance prior to Government acceptance.

35. HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (JAN 1997). FAR 52.223-3

(a) "Hazardous material", as used in this clause, includes any material defined as hazardous under the latest version of 29 CFR 1910.1200(g) (including revisions adopted during the term of the contract).

(b) The offeror must list any hazardous material, as defined in paragraph (a) of this clause, to be delivered under this contract. The hazardous material shall be properly identified and include any applicable identification number, such as National Stock Number or Special Item Number This information shall also be included on the Material Safety Data Sheet submitted under this contract.

Material (If none, insert "None")	Identification No.
_____	_____
_____	_____

(c) This list must be updated during performance of the contract whenever the Contractor determines that any other material to be delivered under this contract is hazardous.

(d) The apparently successful offeror agrees to submit, for each item as required prior to award, a Material Safety Data Sheet, meeting the requirements of 29 CFR 1910.1200(g) for all hazardous material identified in paragraph (b) of this clause. Data shall be submitted in accordance with 29 CFR 1910.1200(g), whether or not the apparently successful offeror is the actual manufacturer of these items. Failure to submit the Material Safety Data Sheet prior to award may result in the apparently successful offeror being considered nonresponsive and ineligible for award.

(e) If, after award, there is a change in the composition of the item(s) or a revision to 29 CFR 1910.1200(g), which renders incomplete or inaccurate the data submitted under paragraph (d) of this clause, the Contractor shall promptly notify the Contracting Officer and resubmit the data.

(f) Neither the requirements of this clause nor any act or failure to act by the Government shall relieve the Contractor of any responsibility or liability for the safety of Government, Contractor, or subcontractor personnel or property.

(g) Nothing contained in this clause shall relieve the Contractor from complying with applicable Federal, State, and local laws, codes, ordinances, and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

(h) The Government's rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this clause is applicable. The purposes of this right are to--

(i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials;

(ii) Obtain medical treatment for those affected by the material; and

(iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h)(l) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

36. PARTNERING. In order to most effectively accomplish this contract, the Government is willing to form a cohesive partnership with the Contractor. This partnership would strive to draw on the strengths of each organization in an effort to achieve a quality project done right the first time, within budget, and on schedule. This partnership would be bilateral in make-up and partnership will be totally voluntary. Any cost associated with effectuating this partnership will be agreed to by all parties and will be shared equally with no change in contract price.

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DIVISION 2 - SITE WORK

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SECTION 02140 - DEWATERING AND SURFACE WATER CONTROL

PART 1 GENERAL

1.1 SCOPE. The work provided for herein consists of furnishing all plant, labor, material, and equipment and performing all operations required for designing, furnishing, installing, testing, operating, maintaining and removing a system to dewater the cofferdammed area and control surface water in the cofferdammed area. It includes maintaining this area free from water during construction operations, rewatering the area under controlled conditions, and removing the entire unwatering, dewatering and surface water control system.

1.2 QUALITY CONTROL.

1.2.1 General. The Contractor shall establish and maintain quality control for all unwatering, dewatering, surface water control operations, and subsequent rewatering to assure compliance with contract requirements and shall maintain records of such quality control for all construction operations, including but not limited to the following:

(1) Fabrication and workmanship.

(2) Installation, testing, operation, and removal.

(3) Monitoring piezometric elevations.

(4) Measuring quantity of effluent from pumping systems.

(5) Monitoring of sanding.

(6) Monitoring of flooding.

1.2.2 Reporting. A copy of these records and tests, as well as records of corrective action taken, shall be furnished to the Government on an approved form on a daily basis (based on a 7-day week) for that day's operation. Reports of operation and inspection shall include the following data: piezometric elevations, time of operation of each pump, mode of operation of each pump (e.g., diesel or electric), time of operation of each well and/or wellpoint segment, quantity of effluent discharge from each pump and wellpoint segment, position of valves, sanding rates, problems encountered, proposed actions, and any other pertinent data.

1.3 GENERAL. All permanent construction within the cofferdammed area shall be carried on in areas free of water. The Contractor shall design, furnish, install, test, operate, and maintain dewatering and surface water control system to accomplish the following:

(1) Collect, control, and dispose of all surface water regardless of source, to prevent such water from entering the cofferdammed areas.

(2) Install, maintain, and monitor construction piezometers.

(3) Lower and maintain the piezometric surface at all points within the cofferdammed area at least five feet below the bottom of all excavated surfaces.

1.4 DEFINITIONS.

1.4.1 Dewatering. Dewatering as defined for purposes of this contract,

is the lowering of the piezometric surface as specified in para 02140-1.3(3) to ensure dry, firm working conditions.

1.4.2 Surface Water Control. Surface water control consists of the collection, control, removal and disposal of all surface water within the cofferdammed areas regardless of source. This includes providing adequate measures to prevent erosion of the foundation and erosion of excavation slopes.

1.4.3 Rewatering. Rewatering is defined as the controlled process of shutting off, adjusting, or slowing down the dewatering system in the excavated area to a specified elevation at a specified rate when construction in the cofferdammed area is completed.

1.5 SUBMITTALS. Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted to the Contracting Officer in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

1.5.1 Care of Water Plan; GA. Within 30 days after receipt of the Notice to Proceed, submit for review of system design and performance, details of its proposed dewatering and surface water control systems, including the following:

(1) Type of system.

(2) System capacity, supporting calculations, and rationale.

(3) Planned layout and sizes of wells, well points, headers (including all lengths requiring burial), valves, collectors, ditches, piezometers, sumps and pumps.

(4) Capacities of standby pumping and power-supply facilities.

(5) Number, type, location, proposed method of installation, and proposed methods of testing of piezometers.

(6) Facilities for measuring the flow of water pumped for each well and/or wellpoint segment and the total flow from the dewatering, and surface water control systems.

(7) Facilities for monitoring of sanding.

(8) Provisions for disposal of water from the system.

(9) Facilities to prevent scour from system discharge.

(10) Plan of operation, including rewatering and flooding plans.

1.5.1.1 This submittal shall also include the design capacity of each well and/or wellpoint segment at the design stage, supported by calculations and rationale. The submittal will not be accepted for review unless it contains all of the items enumerated above.

PART 2 PRODUCTS

2.1 DESIGN. The dewatering and surface water control system shall be designed by the Contractor, using accepted professional methods of engineering design consistent with the best current practice, to meet all the system requirements herein. The Contractor shall perform necessary tests and/or analyses of the groundwater quality and soil environment at the site to

satisfy itself that materials used in the system will not corrode, incrust, become silted, degrade, chemically react, or otherwise deteriorate to such an extent that the system will not perform satisfactorily during the life of the contract. The Contractor shall incorporate adequate preventative and/or maintenance procedures in the system design to prevent the clogging of the system due to incrustation build up resulting from the deposition of dissolved minerals, slime-forming organisms, and any other incrustants. The Contractor shall be responsible for all damage to any and all work both permanent and temporary caused by failure to operate and maintain the system as specified.

2.2 DEWATERING and SURFACE WATER CONTROL REQUIREMENTS. The dewatering system shall consist of pumped wells, well points or combinations thereof, and necessary appurtenances capable of maintaining all free water and piezometric surfaces specified in paragraphs 02140-2.2.1 and 02140-2.2.2. The interior surface water control system shall consist of sumps, sump pumps, ditches or combinations thereof, and necessary appurtenances, and shall be operated to insure that construction operations may be performed without interruption due to wet conditions.

2.2.1 The dewatering system shall be designed, installed and operated to accomplish all specified requirements for Mississippi River elevations up to and including 436.5 NGVD. Intermediate stages used for interim dewatering while installing the remainder of the system and prior to completion of final dewatering system stages shall be designed, installed, and operated to permit installation of the subsequent stages for the maximum expected groundwater levels.

2.2.2 The dewatering system shall be of such capacity and shall be operated such that it will lower and maintain the piezometric levels at all points within the cofferdammed area to an elevation at least five feet below all earth slopes and excavation surfaces. Compliance with these requirements will be determined using all available piezometric information, and interpolation between such piezometers. No permanent construction in the cofferdammed area will be permitted until this requirement is met. Seepage shall be intercepted before it exits on any interior surface or excavation face. System capacity shall be continuously reviewed during operation and, if necessary, increased to insure that the installed capacity will always be adequate to perform the specified dewatering for the specified conditions. System capacity review, and any increase in such capacity to adequately perform the specified dewatering for the specified conditions, shall be included in the bid price.

2.2.3 The dewatering system shall be operated continuously from initial unwatering until construction is complete, or as directed by the Contracting Officer. No upward or lateral flow of groundwater into the cofferdammed area shall be permitted at any time. The dewatering system shall be designed, constructed, and operated to prevent movement and/or piping of any foundation or fill materials.

2.2.4 The installation of the dewatering system shall not disturb any existing structures or their foundations. Jetting shall not be allowed within 50 feet of any installed piling.

2.2.5 Piezometers shall be used to measure the piezometric elevations in the cofferdammed area. The Contractor shall make a minimum of one reading per piezometer, per 24-hour period, including holidays, based on a 7-day week. Piezometer readings shall be converted to elevations and furnished as specified in paragraph 02140-1.2.2. The Contracting Officer reserves the right to read, record and check these piezometers with Government personnel at any time. The Contractor shall install a minimum of three piezometers in each cofferdammed area. At least one of these piezometers shall be located near

the center of the PZ-22 sheetpile reaction wall. The Contractor may, at his expense, install additional piezometers and obtain supplemental piezometric data from these piezometers and by other approved means. This supplemental piezometric data shall be furnished to the Government without additional cost.

2.2.6 Flow measurement from each pump of the dewatering system is required. Any devices used to measure flow shall be demonstrated to be accurate within 3 percent at the flows encountered. The Contractor shall make a minimum of one flow measurement per pump, per 24-hour period, based on a 7-day week. These instrument readings shall be recorded and reported to the Contracting Officer within 24 hours after they are obtained. The Contracting Officer reserves the right to read, record and check instrument readings at any time.

2.2.7 Sanding. The dewatering system shall be designed, installed and operated in a manner which precludes removal of materials from the foundation by the pumping operation (hereafter referred to as "sanding"). After installation, the dewatering system shall be tested to verify acceptability with respect to sanding. Rossum sand testers shall be used to measure the sanding characteristics of each well or wellpoint segment. Any well or wellpoint segment found sanding at a rate exceeding 1 pint per 25,000 gallons of effluent at any time during this contract shall be replaced by the Contractor at no additional cost to the Government. The initial sanding tests shall be performed after the cofferdammed area is dewatered and every 30 days thereafter.

2.2.8 Discharge. Discharge from the dewatering system shall not scour or erode the soil.

2.2.9 Rewatering. Rewatering shall be accomplished by adjusting, slowing down, or shutting off the dewatering system in a manner that will not damage permanent work. The maximum rate of rise in rewatering the cofferdammed area shall be 3 feet per day until the free water surface reaches the surrounding free water surface elevation.

2.2.10 The system shall be provided with sufficient standby components and spare parts to assure continuous achievement of the specified dewatering. The number of standby components and spare parts shall be determined by the Contractor in consideration of known reliability and availability to ensure continuous operation.

PART 3 EXECUTION

3.1 OPERATION. The Contractor shall be required to perform dewatering and surface water control, and to maintain the cofferdammed areas in a workable condition continuously and as long as necessary to perform the work under this contract. Once the cofferdammed area is dewatered, it shall be maintained in a dewatered condition until all work in that area is completed, unless directed by the Contracting Officer.

3.2 MAINTENANCE AND SERVICING. The Contractor shall be responsible for the maintenance, servicing, and repairs of the entire dewatering, and surface water control system and appurtenances, during the life of the contract, including but not limited to replacement of, all wells, wellpoints, appurtenances or piezometers found performing unsatisfactorily. Maintenance, servicing, and repair operations are not cause for relaxation of the specified dewatering requirements, and the system shall be designed to provide the specified conditions during maintenance, servicing and repair.

3.3 DISMANTLING AND DISPOSAL. After the dewatering operations are completed, the entire system and all component parts shall be dismantled and

removed from the project, except as specified in paragraph 02140-3.4.2 and shall become the property of the Contractor.

3.4.2 Wells, Wellpoints and Piezometers. Screens and riser pipes shall be pulled and holes backfilled with a sand and cement grout. Subject to the approval of the Contracting Officer, screens and riser pipes outside the limits of the structure and future structures may be cut off below finished grade or below the base of existing or future stone protection, whichever is lower, and backfilled with a sand and cement grout. The holes shall be backfilled to the final grading elevation. Screens and riser pipes shall be removed from the project and shall remain the property of the Contractor.

3.4 FLOODING. The contracting officer may, at any time during this contract, direct the contractor to flood the cofferdammed area in anticipation of overtopping or for any other emergency. Upon a directive to flood the cofferdammed area, the contractor shall implement the flooding plan and flood the cofferdammed area to the prevailing river elevation in a period not to exceed 36 hours. Flooding of the cofferdammed area shall be accomplished by directing surface water, groundwater, effluent from the dewatering and surface water control system, and if necessary, river water, into the cofferdammed area. The dewatering system shall be kept operating at full capacity until the water surface elevation in the cofferdammed area is equal to the prevailing river elevation. No upward, vertical or lateral flow of groundwater into the cofferdammed area shall be permitted during the flooding. All surfaces in the cofferdammed area shall be protected against scour and erosion during the flooding. All of the contractors facilities located within the cofferdammed area shall be removed, designed and/or floodproofed to permit flooding within the allotted 36-hours and resume service within 7-days after the Contracting Officers directive to begin unwatering after flooding.

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SECTION 02212
IMPERVIOUS EMBANKMENT

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SECTION 02212
IMPERVIOUS EMBANKMENT

PART 1 - GENERAL

1.1 SCOPE. The work covered by this section consists of furnishing all plant, labor, and equipment, and performing all operations in connection with foundation preparation and construction of embankments, including new levee, berms, ditch crossings, and other incidental earthwork as may be necessary to complete the embankments as specified herein and as shown on the drawings.

1.2 QUALITY CONTROL. The Contractor shall establish and maintain quality control and maintain records of quality control for all embankment construction operations to assure compliance with all contract requirements including but not limited to the following:

(1) Equipment. Type, size, and suitability for construction of the prescribed work.

(2) Foundation Preparation. Prepare the foundation by breaking the surface in advance of embankment construction, and during fill placement when necessary, drainage of foundation and partially completed fill.

(3) Materials. Suitability of materials for use in embankment.

(4) Construction. Layout, maintaining existing drainage, moisture control, thickness of layers, spreading and compacting.

(5) Grade and Cross Section. Crown width, crown slope, side slopes, and grades.

(6) Roads and Ramps. Location of temporary roads to fields or buildings, location and placement of fills for ramps in accordance with specified dimensions and grades.

(7) Grade Tolerances. Check fills to determine if placement conforms to prescribed grade and cross section.

(8) Slides. Location and limits; methods and equipment used where remedial work has been directed.

(9) Quantity Surveys. Accuracy and timeliness.

1.2.1 Testing By The Government. During the life of this contract, the Government may perform quality assurance tests to check the Contractor's work for compliance with these specifications. The performance of such tests may temporarily delay the Contractor and shall not be the basis for additional compensation and/or time.

1.2.2 Reporting. A copy of these records of inspections and tests, as well as the records of corrective action taken, shall be furnished the Government daily.

1.3 REFERENCES. The following publications, referred to hereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

1.3.1 American Society for Testing and Materials (ASTM).

D 698-91 Laboratory Compaction Characteristics of Soil Using

Standard Effort (12,400 ft-lbf/cu.ft. (600 kN-m/cu.m.))

D 1556-90 Density and Unit Weight of Soil In-Place by the Sand Cone Method

D 2216-92 Laboratory Determination of Water (Moisture) Content of Soil and Rock

D 2487-92 Classification of Soils for Engineering Purposes (Unified Soil Classification System)

D 2937-83 (R 1990) Density of Soil in Place by the Drive-Cylinder Method

1.4 SUBMITTALS. Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 SUBMITTAL PROCEDURES:

1.4.1 Statements. Earthwork Plan; GA. Submit complete and detailed descriptions of proposed earthwork plan. This plan shall include, but not be limited to, the Contractor's proposed sequence of construction for all earthwork including backfill and embankment items; methods and types of equipment to be utilized for all earthwork operations, including transporting, placing and compacting; quantity, type and final disposition of stockpiled materials; location and drainage of proposed stockpiles; proposed disposition of all excavated materials, including items which are anticipated to be disposed of off-site. The earthwork plan shall be submitted to the Government not less than 30 days prior to initiating any earthwork operations.

PART 2 - PRODUCTS

2.1 EQUIPMENT.

2.1.1 Compaction Equipment. The Contractor may use tractor-drawn or self-propelled sheeps foot rollers, hand-operated, hydraulic power tampers or other approved equipment to compact the impervious fill. All compactors shall be field checked under the Contracting Officer's direction and supervision prior to their use on the fill to assure that the required results, as specified in paragraph 3.2, can be obtained. Any equipment which does not produce the required results will not be allowed on the fill.

2.1.2 Crawler-Type Tractors. Crawler-type tractors used for spreading shall weigh not less than 20,000 pounds, shall exert a unit tread pressure of not less than 6 pounds per square inch, and shall be operated at speeds not to exceed 3.5 miles per hour. With the exception of impervious fill through standing water, crawler type tractors shall not be used to compact the impervious embankment.

2.1.3 Sheeps Foot Rollers. Sheeps foot rollers shall consist of one or more units. Each unit shall consist of a cylindrical drum not less than 60 inches in length and not less than 60 inches in diameter. The drums shall be water, or sand and water ballasted. Each drum shall have staggered feet uniformly spaced over the cylindrical surfaces so as to provide approximately 3 sheeps feet for each two square feet of drum surface. The sheeps feet shall be 7 to 9 inches in clear projection from the cylindrical surface of the roller, and shall have a face area of not less than 5 nor more than 10 square inches. The weight of the roller when fully loaded shall not be less than 4000 pounds per linear foot of drum length and when empty shall not be more than 2500 pounds per foot of drum length. The Contractor will be required to

vary the amount of ballast in the drums to obtain optimum compactive effort for the material being compacted. The rolling units shall be equipped with a suitable device for cleaning the feet. The rolling units of multiple-type sheeps foot rollers shall be pivoted on the main frame in a manner that will permit the units to adapt themselves to uneven ground surfaces and to rotate independently. The roller shall not exceed 3.5 miles per hour.

2.1.4 Spreading Equipment. Spreading equipment shall be capable of spreading and blending materials in horizontal layer thicknesses between 6 and 12 inches.

2.1.5 Miscellaneous Equipment. Scarifiers, disks, spring-tooth or spike-tooth harrows, spreaders and other equipment shall be of types suitable for the type of construction required and acceptable to the Contracting Officer.

2.1.6 Sprinkling Equipment. Sprinkling equipment shall be designed to apply water uniformly and in controlled quantities to variable widths of surface.

2.2 EMBANKMENT MATERIALS. The embankment shall be constructed of materials classified by the Unified Classification Systems as clays (CL and CH) obtained from the borrow areas and required excavations as prescribed in SECTION 02220 - EXCAVATION and as shown on the drawings. Contractor furnished impervious borrow is described in SECTION 02220 - EXCAVATION. The embankment shall be constructed of earth that is free from unsuitable and frozen materials as defined in paragraphs 2.2.1 and 2.2.2.

2.2.1 Unsuitable Materials. Material classified by the Unified Soil Classification System (as shown on the soil Boring Legend) as gravels (GW, GP, GM), sands (SW, SP, SM) and silts (ML, MH, OH) are unsuitable for use as embankment material, unless suitably blended with suitable material to the extent that is no longer classifies as these materials. Materials which are classified as unsuitable for embankment material are defined as masses of organic matter, sticks, branches, roots, and other debris. Isolated pieces of wood will not be considered objectionable in the embankment provided their length does not exceed 1 foot, their cross-sectional area is less than 4 square inches, and they are distributed throughout the fill. Not more than 1 percent by volume of objectionable material shall be contained in each cubic yard of the levee section.

2.2.2 Frozen Materials. Under no circumstances shall frozen earth, snow or ice be placed in an embankment.

PART 3 - EXECUTION

3.1 FOUNDATION PREPARATION.

3.1.1 Scarifying. After clearing, grubbing, and stripping and any required excavation of the embankment foundation, any cavities and depressions shall be broken down, where so directed, to flatten out the slopes. The entire earth surface on or against which fill is to be placed shall be thoroughly scarified to a depth of 6 inches. If for any cause, this broken surface becomes compacted in such a manner that, in the opinion of the Contracting Officer, a plane of seepage or weakness might be induced, it shall again be adequately scarified before depositing material thereon. All scarifying and breaking of ground surface shall be done parallel to the centerline of the levee. The slopes and bottom of the inspection trench shall be scarified. All of the foregoing work shall be completed at least 200 feet but not greater than 300 feet in advance of the embankment construction.

3.1.2 Drainage. All foundations receiving fill and all partially completed fill shall be kept thoroughly drained.

3.1.3 Frozen Ground. No fill shall be placed upon frozen ground.

3.2 EMBANKMENT CONSTRUCTION. Embankment materials shall be as specified in paragraph 2.2.

3.2.1 Placement of Impervious Fill.

3.2.1.1 Semi-Compacted Fill. Materials shall be placed or spread in layers with the first layer of fill not more than 6 inches in thickness and all succeeding layers not more than 8 inches in thickness, all prior to compaction. Layers shall be started full out to the slope stakes and shall be carried substantially horizontal and parallel to the levee centerline with sufficient crown or slope to provide satisfactory drainage during construction. When, in the opinion of the Contracting Officer, the surface of any compacted layer is too smooth to bond properly with the succeeding layer, it shall be scarified to the satisfaction of the Contracting Officer before the succeeding layer is placed thereon. Placement of material by casting equipment will be permitted as an alternative to placement with hauling equipment. Where casting equipment is used, the material shall be spread in layers not more than 8 inches thick prior to compaction.

3.2.1.2 Placement Through Standing Water. Impervious materials placed in water shall be dumped on dry land and pushed therein to an elevation 1-foot above the water surface elevation. The contractor shall use a crawler type tractor that exerts a tread pressure of not less than 6 pounds per square inch to push the material into the standing water. The material placed through standing water shall be placed in such a manner as to insure that softer material in the foundation shall be forced progressively outward from the section and not be trapped within the base of the embankment. The fill shall be carried out to the finished slope lines shown on the drawings. Dragging material up slopes in order to fill low areas is prohibited. Material placed in water that becomes too wet and/or unworkable will not be measured for payment.

3.2.1.3 Placement Against New Concrete. No impervious material shall be placed against concrete less than 14 days old.

3.2.1.4 Benching. When impervious material is to be placed against an existing embankment, the contractor shall bench into the slope of the existing embankment in order to place and compact the new material in horizontal layers. The vertical face of the existing embankment resulting from the benching operation shall be a minimum of one foot in height but shall not exceed two feet in height.

3.2.1.5 Special Backfill Placement. The backfill around any structure shall be brought up to grade uniformly so as to not induce unbalanced lateral loading.

3.2.2 Moisture Control.

3.2.2.1 Semi-Compacted Fill. This fill shall be placed at the natural moisture content of the embankment materials. However, if in the opinion of the Contracting Officer, material that is too dry for proper compaction, shall be pre-wetted in the borrow area with the moisture uniformly distributed before placement in the excavation. Material that is too wet, shall be stockpiled in the borrow area and allowed to drain before it is placed in the embankment. The wet material shall be processed by disking and harrowing, if necessary, until the moisture content is reduced sufficiently.

3.2.2.2 Fill Placed Through Water. This fill shall be placed at the natural moisture content of the embankment materials.

3.2.3 Compaction. It shall be the Contractor's responsibility to ensure that the equipment and the materials produce compacted fills which meet the requirements of this section. Compaction of impervious material shall be accomplished with the equipment previously submitted to the Contracting Officer.

3.2.3.1 Semi-Compacted Fill. When the moisture content and conditions of the spread layers are satisfactory, each layer shall be compacted by not less than four (4) complete passes of a tamper-type roller or tractor dozer conforming to the requirements of paragraph 2.1.1. A pass shall consist of one complete coverage of the surface of a layer by the treads of the roller. If tamping rollers are used in tandem not more than two rollers in tandem will be permitted and in such case, one trip of the tandem rollers over any surface will be considered as two(2) passes. When tamping rollers are used in tandem the tamper foot spacing shall be offset so that the circumferential rows on the rear drums are in line with the mid-point of the circumferential rows on the forward drums. Each pass of the tamping roller shall overlap the preceding or adjacent pass by not less than one (1) foot. Portions of the embankment which the roller cannot reach for any reason shall be compacted by any approved method to the density of the surrounding embankment.

3.2.3.2 Fill Placed Through Water. There are no compaction requirements for this fill. The only compaction effort will be that obtained by the placement and spreading procedures. That part of the fill above the water shall be considered to be semi-compacted fill.

3.3 CROSS SECTIONS AND ZONING OF MATERIALS.

3.3.1 Embankment Sections. Unless otherwise specified, the dimensions and slopes shall conform to the applicable cross sections, within allowable tolerance, shown on the drawings.

3.3.2 Zoning of Materials for Levee Construction. Where materials of varying permeabilities are encountered in the borrow areas or required excavations, the more impervious material shall be placed toward the riverside slope and the more pervious material toward the landside slope.

3.3.3 Dressing. The entire embankment, including topsoil where specified, shall be brought to not less than the prescribed design cross section within allowable tolerance, at all points. Unreasonable roughness of surface shall be dressed out to permit turfing operations.

3.3.4 Fill Placed Through Standing Water. The contractor shall place impervious fill through standing water in the following areas:

The various ditches that cross the proposed centerline. Some of these ditches are located in the vicinity of project stations 4+20, 6+35, 26+35, 36+00, 69+00, 79+10 and 140+00. This may not be a complete list, the contractor is cautioned that he may encounter other such areas.

The zone between the back of the cells and the excavation line at sites Q-2, O-6.2 and O-6.3.

3.4 GRADE TOLERANCES. All embankments shall be constructed to the design grade and cross section shown on the drawings with a tolerance of 3/10 of 1 foot above and zero feet below the prescribed design grade provided that the crown of the levee drains, there are no abrupt humps or depressions in

surfaces or bulges in the width of the crown, and the side slopes are uniform. Any partial fill or temporarily stockpiled material placed within the design section shall not exceed the design grade or design slopes of the embankment.

3.5 SLIDES. Should sliding occur in any part of the embankment during its construction, or after its completion, but prior to its acceptance, the Contractor shall, upon written order of the Contracting Officer, either cut out and remove the slide from the embankment and then rebuild that portion of the embankment, or construct a stability berm of such dimensions, and placed in such manner, as the Contracting Officer shall prescribe. In case the slide is caused through fault of the Contractor, the foregoing operations shall be performed at no additional cost to the Government. In case the slide is not the fault of the Contractor, the material shall be replaced and an equitable adjustment in the contract price will be made. The method of slide correction will be determined by the Contracting Officer.

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DIVISION 14 – CONVEYING SYSTEMS

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SECTION 14629 - STOPLOG HOISTS

PART 1 – GENERAL

1.1 SCOPE. The work provided for herein consists of furnishing all plant, labor, materials and equipment and designing, manufacturing, fabrication, delivery, storing, installing and field testing the trolley, electric chain hoists and tackle system complete with all necessary accessories and appurtenances, all as shown on the contract drawings and specified herein.

1.2 QUALITY CONTROL.

1.2.1 General. The Contractor shall establish and maintain quality control for all trolley, hoist and tackle system operations to assure compliance with contract requirements and maintain records of quality control for all construction operations, including but not limited to the following:

(1) All shop fabrication.

(2) Shop painting.

(3) Use of specified materials and equipment.

(4) Shop tests.

(5) Preparation for shipment and storage at the worksite.

(6) Inspection at the worksite for damage to and defects in all material and equipment.

(7) Storage at the worksite.

(8) Installation and all field tests.

(9) Operation and maintenance after installation.

1.3 APPLICABLE PUBLICATIONS. The following publications of the issues listed below, but referred to hereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

1.3.1 American National Sandards Institute (ANSI).

B 30.16-98 Overhead Hoists (Underhung)

1.4 SUBMITTALS. Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

1.4.1 Data. Trolley, tackle system and electric hoists; GA. A complete list of equipment and materials, including manufacturer's descriptive

data and technical literature, performance charts, catalog cuts, and installation instructions.

1.4.2 Drawings. Trolley and hoist system and tackle system; GA. Drawings and/or catalog cuts showing details, dimensions, and operating data of the hoists. The operating data shall include hoist rating, weight of hoist including length of chain to be supplied, motor horsepower, operating voltage, full load current and locked rotor current. Drawings and/or catalog cuts showing details, dimensions and operating data of the tackle system components and a drawing of tackle system assembly. Operating data shall include tackle system rating, block sizes, sheave size, rope diameter, and weight of the tackle system.

1.4.3 Operation and Maintenance Manuals. Trolley, electric chain hoists and tackle system; GA. Eight copies of the manual containing complete information on operation, lubrication, adjustment, routine and special maintenance, dissassembly, repair, reassembly, and trouble diagnostics for the equipment furnished. Manuals shall include the manufacturer's name, model number, parts list (including components parts source listing), and brief description of all equipment and basic operating features. One complete set prior to performance testing and the remainder upon acceptance. The operation and maintenance manual shall be printed on good quality 8 1/2 inch by 11 inch paper, bound with a flexible, durable cover. Drawings incorporated into the manual may be reduced to page size provided they are clear and legible, or they may be folded into the manual page size.

1.5 QUALIFICATIONS. Trolleys, hoists and components of tackle system shall be manufactured by a company with a minimum of 10 years of specialized experience in designing and manufacturing the type of equipment specified herein.

1.6 RELATED WORK SPECIFIED ELSEWHERE.

1.6.1 Trolley and Hoist Support Framing. Trolley and hoist support framing requirements are as indicated on the drawings.

1.6.2 Stoplogs. Stoplog requirements are as indicated on the drawings.

1.6.3 Stoplog Pickup Beam. Stoplog pickup beam requirements are as indicated on the drawings.

1.6.4 Stoplog Support Framing. Stoplog support framing requirements are as indicated on the drawings.

1.6.5 Jib Crane. Jib crane requirements are as specified in SECTION 15300 – JIB CRANE.

1.7 WORKMANSHIP. All workmanship, whether during shop fabrication or at the worksite, shall be performed in a skillful and workmanlike manner by qualified mechanics under competent supervision and direction and in accordance with the best modern practice for the various trades involved and for the manufacture of high-grade material and equipment. All parts shall conform to the shop drawings and shall be free of all defects in either workmanship or materials that will impair their service.

1.8 SHIPPING AND STORAGE. The electric motor driven hoists and tackle systems shall be stored indoors, protected from humidity, temperature variations, dust, contaminants and construction or weather hazards at the project site.

PART 2 - PRODUCTS

2.1 MANUAL TROLLEY. Five manual, push type trolleys for top hook mounted hoists shall be provided, one for each jib crane or trolley beam provided for stoplog operations. Each trolley shall be rated for a minimum load of 1 ton with a minimum safety factor of 5 to 1. Each trolley shall be of steel construction with four wheels and designed for continuous outdoor service. The trolleys for sites R-3 and Q-2 shall be suitable for operation on a S12x31.8 "I" beam. The trolleys for sites O-6.1, O-6.2 and O-6.3 shall be suitable for operation on a S18x54.7 "I" beam. Each trolley shall be equipped with a cross pin and a 1/2-inch thick suspension plate. The trolleys shall be finish painted with the manufacturer's standard paint system for outdoor service.

2.2 ONE-HALF TON ELECTRIC CHAIN HOIST. Two 1/2 ton electric chain hoists shall be provided for use on the jib cranes and trolley beams for stoplog operations. One hoist shall have a 20 foot lift height and the other a 30 foot lift height. The hoist with the 30 foot lift will be used at sites O-6.1, O-6.2, O-6.3 and Q-2. The hoist with the 20 foot lift will be used at site R-3. The hoist shall have a 5:1 design safety factor. The hoist shall be provided with electronic overload protection to prevent damaging overloads. The hoist shall have hardened steel gears which are lifetime lubricated and are protected by a die-cast aluminum housing. The motor shall have a totally enclosed, non-ventilated housing. The hoist shall have a dual breaking system – D.C. and regenerative. The motor shall be a hoist duty motor with an HMI H4 duty rating and shall be thermally protected. The hoist shall be provided with a NEMA 4 rated pendent control. The hoist shall operate on 120-volt, 60 cycle, single phase power. The hoist shall be provided with a grounded power supply cord with a 3 prong plug. The top and bottom hooks shall have safety latches. The bottom hook shall rotate 360. The load sheave shall be heat treated alloy steel and shall provide smooth operation to reduce chain wear. A chain container shall be provided for slack chain. The hoist with 20-foot lift shall weigh no more than 40 lbs. The hoist with 30-foot lift shall weigh no more than 45 lbs. The hoist shall meet the applicable requirements of ANSI B30.16. The hoist shall be painted with the manufacturer’s standard paint system for outdoor enclosures.

2.3 ONE TON ELECTRIC CHAIN HOIST. Two 1 ton electric chain hoists shall be provided for use on the jib cranes and trolley beams for stoplog operations. One hoist shall have a 20 foot lift height and the other a 30 foot lift height. The hoist with the 30 foot lift will be used sites O-6.1, O-6.2, O-6.3 and Q-2. The hoist with the 20 foot lift will be used at site R-3. A chain container shall be provided. The hoists shall have through-hardened, alloy steel load chain and hardened, forged steel latch type hooks

with swivel load hook. The hoist shall operate on 120-volt, 60 cycle, single phase power. The hoist shall be equipped with a solid state starting switch that eliminates moving parts in the motor start/reverse switch. The hoist shall have a single speed, heavy duty hoist motor with an HMI H4 duty cycle rating. The hoist shall have a lifetime lubricated gear train with machined and heat treated gears. The lift wheel shall be machined and hardened alloy steel. Hardened steel chain guides shall completely surround the lift wheel. Overload protection that prevents lifting of dangerous loads shall be provided. Adjustable, screw type limit switches to prevent overtravel of hoist load chain shall be provided. The hoist shall have a disc type, heavy-duty electric hoist brake that securely holds the load, even in event of power failure. The pendent control station shall be completely sealed, NEMA 4 rated and shall have internal strain relief and snap-action contacts for positive control. The hoist housing and covers shall be of cast aluminum alloy. The hoist shall meet the applicable requirements of ANSI B30.16. The hoist shall be painted with the manufacturer's standard paint system for outdoor enclosures.

2.3.1 Chain. Two 1 foot lengths of type 316 stainless steel lifting chain with a safety hook on one end which will hook onto the trolley specified in paragraph 2.1 above shall be provided. The chain end link shall be suitable for hooking the top hook of the one ton electric chain hoist into. The chain working load shall be rated for a minimum load of 1 ton with a minimum safety factor of 5 to 1.

2.4 TACKLE HOISTING SYSTEM. Two complete, assembled, tackle hoisting systems shall be provided for hoisting the one ton electric chain hoist up to the trolley. The system shall consist of a chain which wraps around the trolley beam, and a tackle system which can hook on to the chain. The tackle system shall be single reeved and shall provide a 2:1 mechanical advantage. The hoist shall have self-locking block tackles which lock automatically when a load is applied, to prevent the load from falling. The system shall have a minimum safety factor of 5 to 1 based on the weight of the one ton electric chain hoist specified above. The tackle system shall have a total lift of 20 feet.

2.4.1 Blocks. Blocks shall be galvized steel, single reeved, with forged steel swivel hooks, and bronze self-lubricating bushings.

2.4.2 Manila Rope. Tackle system rope shall be three strand, natural color manila rope. Rope ends shall be permanently sealed to prevent fraying.

2.4.3 Chain. A 5 foot length of chain shall be provided for wrapping around the jib crane beam or trolley beam to hook the top hook of the tackle system into. The chain working load shall be a minimum of 5 times the total weight of the tackle system and the 1 ton electric hoist. The chain links shall be large enough for the top hook of the tackle system to hook into.

2.5 PORTABLE GENERATOR. Two portable generators shall be provided to provide power for operation of the electric hoists.

2.5.1 Generator. The generator shall be a portable gasoline engine driven type generator with a minimum output of 2500 watts at 120 V, 60 cycle, single phase. The gasoline engine shall be four-cycle, single cylinder, air

cooled with a minimum rating of 5 hp. The engine shall have a tubular steel one man carrying frame, muffler, integral minimum 3 quart fuel tank, air cleaner, stop switch and automatic recoil rope starter. The generator shall have a minimum of one duplex, 120 V, 15 amp receptacle. A 100-foot length of 3-conductor, No. 12 AWG, 300-volt, Type SJOW-A cable, equipped at one end with an attached cord-grip, 3-wire, 3-pole, weatherproof plug rated at a minimum of 15 amperes at 125 volts suitable for use with the generator receptacle, and equipped at the other end with an attached cord-grip type, 3 wire, 3-pole, weatherproof receptacle rated at a minimum of 15 amperes at 125 volts suitable for use with the plug attached to the power cord for the electric hoists specified above, shall be provided. The cable shall be provided on a hand wind, portable cable reel of steel construction for heavy duty industrial applications with a built-in tubular steel carrying handle and stand.

PART 3 - EXECUTION

3.1 INSTALLATION. The Contractor shall install one trolley on each jib crane or trolley beam provided. The trolleys and hoist systems shall be installed in accordance with manufacturers written instructions and the contract drawings.

3.2 FIELD INSPECTION AND TESTS.

3.2.1 Pre-Installation Inspection. Before installation, the Contractor shall inspect the trolleys, tackle systems and hoist systems and components at the job site to determine compliance with specifications and manufacturer's data and shop drawings as approved.

3.2.2 Operational Inspection and Load Tests. All field tests shall be at the expense of the Contractor. The tackle hoisting systems and electric chain hoists shall be tested in service, at each jib crane and trolley crane location, to determine that the system operates as specified, is properly installed and adjusted, and is free from defects in material, manufacture, installation, and workmanship. The 1 ton electric chain hoists and the 1/2 ton electric chain hoists shall be used to install and remove the stoplogs indicated on the drawings, at each site. The Contractor shall measure and record the current draw of the hoist motors while stoplogs are being removed. The 1 ton electric hoists shall be installed and removed using the tackle system. The Contractor shall furnish operating personnel, instruments, and all other necessary apparatus. The test and final adjustments of the equipment will be under the supervision of the Contracting Officer. The Contractor shall rectify any deficiencies found and completely retest work affected by such deficiencies.
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SUBJECT Borrow Pit Investigation
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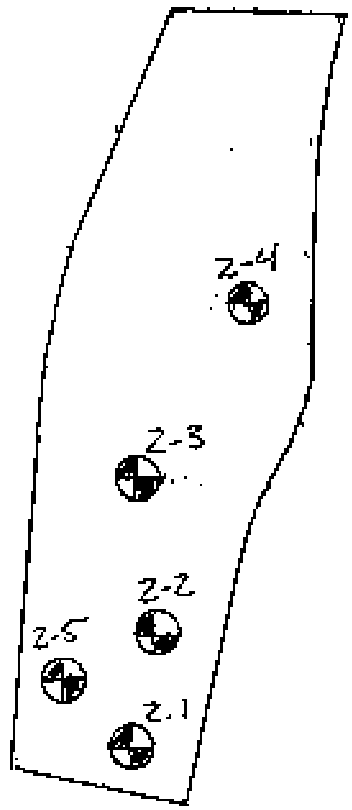

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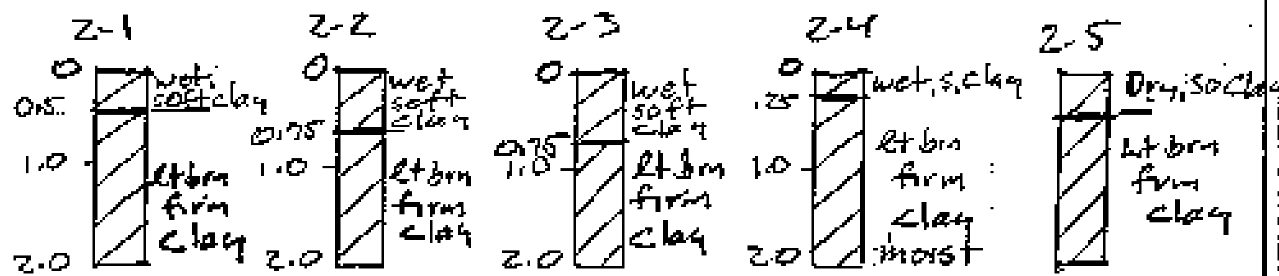

- These 5 holes were dug on 4/9/01
- On this day there was 2-7 inches of water covering the field in the vicinity of holes Z-1, Z-2, Z-3 & Z-4.
- On this day, there was no standing water at hole Z-5

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